**Independent Variables (IV) & Dependent Variables (DV)**

In an experiment, the *independent variable* is the variable that is varied or manipulated by the researcher, and the *dependent variable* is the response that is measured.

An *independent variable* is the presumed cause, whereas the *dependent variable* is the presumed effect.

The IV is the antecedent, whereas the DV is the consequent.

In experiments, the IV is the variable that is controlled and manipulated by the experimenter; whereas the DV is not manipulated, instead the DV is observed or measured for variation as a presumed result of the variation in the IV.

* EXAMPLE 1: Children who have severe allergies are more likely to be rejected by their peers than children without allergies. (Which is the IV? Which is the DV? Once you've decided, click [here](http://depts.clackamas.edu/socsci/faculty/grossmann/variables.html#ivdv1) to check your accuracy.)
* EXAMPLE 2: As temperature rises, crime increases. (Which is the IV? Which is the DV? Once you've decided, click [here](http://depts.clackamas.edu/socsci/faculty/grossmann/variables.html#ivdv2) to check your accuracy.)
* EXAMPLE 3: More students contract influenza around finals week than at any other period during the term. (Which is the IV? Which is the DV? Once you've decided, click [here](http://depts.clackamas.edu/socsci/faculty/grossmann/variables.html#ivdv3) to check your accuracy.)
* EXAMPLE 4: If elderly adults are taught to use the Internet (and provided free access to the necessary equipment and software), their feelings of loneliness will decrease.
* EXAMPLE 5: Students who know their IVs from their DVs do better on tests!!!

**Correlation Doesn't Equal Causation.**

Correlation means that two or more variables are varying together systematically. Generally speaking, when the one variable moves, the other variable also moves in a predictable way. Just because they're moving together systematically, though, doesn't mean that the one is *causing* the other to move.

For example, let's say you've noticed that lots of your friends who are vegetarians seem to get sick less than your friends who aren't vegetarians. Would becoming a vegetarian increase your chance of avoiding sickness? In other words, does vegetarianism *cause* lower rates of illness? Is it our IV, with illness the DV? Perhaps. But perhaps not.

Think of other variables which might be entering the picture. Is there a systematic relationship between people who choose a vegetarian lifestyle and other factors which may affect illnesses? Are people who choose to become vegetarians more likely to watch their diets, to exercise, and/or to avoid situations or habits which could compromise their health? Maybe the "real" IV is health consciousness rather than whether a person chooses to consume meat or not. We cannot tell if all we're watching is rates of illness and vegetarian status. We would need to look at the other factors (sometimes referred to as **latent** variables). We'd need to find health-conscious nonvegetarians and compare them to health-conscious vegetarians to see whether vegetarian status adds any predictive value about rates of illness.

When can you be certain that you're looking at causation, not just correlation? Good question. Experiments are the best way to gain control over all the latent variables that could otherwise influence the DV. When you're looking at a carefully constructed experiment that controls for the extraneous variables (such as exercise or other health habits) and makes sure that the only systematic difference between two sets of people is the IV, then you can have confidence in the results showing causation -- or lack thereof!

HERE ARE A FEW EXAMPLES OF POSITIVE CORRELATION:

1. *THE AMOUNT OF COFFEE DRUNK AND THE NUMBER OF HOURS STAYED AWAKE.*   
*2. THE NUMBER OF PEOPLE FLYING TO AUSTRALIA AND THE NUMBER OF PLANES FLYING TO AUSTRALIA.*   
  
  
Here are some other examples of negative correlations:

1. Education and years in jail-people who have more years of education tend to have fewer years in jail (or phrased as people with more years in jail tend to have fewer years of education)

2. Crying and being held-among babies, those who are held more tend to cry less (or phrased as babies who are held less tend to cry more)